

“DEMAG Speed Monitor-2” operating instructions

Description of functions

Overspeed protection for hoist units with regulated drives is a combined unit comprising incremental encoder (rotary pulse encoder) on the hoist motor and programmable counter (DEMAG Speed Monitor ident. no.: 11431346).

In the event of an inadmissible increase in speed when the load is lifted or lowered, the counter is actuated if the preset speed is exceeded. This, in turn, deactivates the crane switch contactor and thus shuts down all drives.

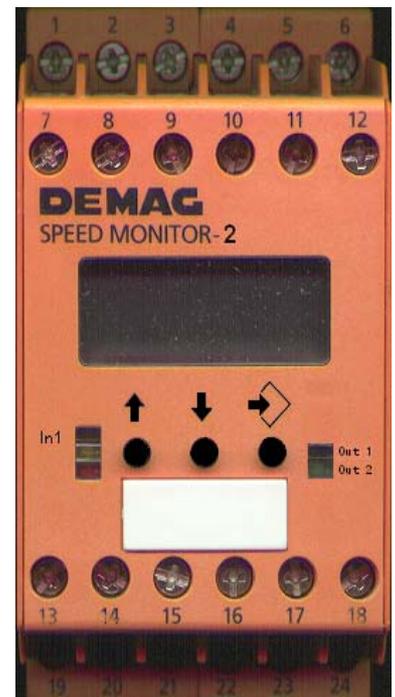
A qualified electrician must be informed immediately after an inadmissible rotational speed increase, who may put the crane into operation again by actuating the ↻ reset button on the Speed Monitor when the fault has been located and repaired.

Commissioning

Before the Speed Monitor are put into operation, the operating parameters must be preset. The setting values of the devices are listed below in the following tables. These values are applicable in connection with a pulse generator with 1024 pulses only.

Speed Monitor Operating parameter	Setting	Explanation
DIM	0	Display unit in display as rotations per minute
NC 1	8	Number of pulses per rotation (integrated distributor 1:128)
SO 1	2	Memory function with front reset and external reset
FO 1	4	Relay drops if switching point is exceeded
SP 1 *)	1650	Switching point in rotations per minute ($n_{sync}+150$)
HY 1	5.0	Hysteresis function (not relevant)
ST 1	2.0	Starting by-pass time
DT 1	0.2	Deceleration time for output
FT 1	0.0	Wiping time (not relevant)
SO 2	2	Memory function with front reset and external reset
FO 2	4	Relay drops if switching point is exceeded
SP 2 *)	2650	Switching point in rotations per minute ($n_{sync}+150$)
HY 2	5.0	Hysteresis function (not relevant)
ST 2	2.0	Starting by-pass time
DT 2	0.2	Deceleration time for output
FT 2	0.0	Wiping time (not relevant)

*) Setting value as an example, see circuit diagram for selected value



Monitoring the speed monitor

The switch-off unit can be checked as follows:

Test step	Start test function	Mandatory test result
1	Preset switch-off speed 1 below the switch-off speed 1 specified in the circuit diagram (e. g. 1000 rpm at 1650 rpm)	Speed Monitor must not be actuated.
2	Actuate LIFT or LOWER pushbutton/control switch and lift or lower at slow speed	Display (e. g. 100 rpm) Speed Monitor must not be actuated. Crane switch must remain switched on.
3	Actuate pushbutton/control switch in the same direction as specified under step 2 and lift or lower at fast speed	Displayed value increases as speed increases. Speed Monitor must be actuated if the preset speed is exceeded and the crane switch main contactor must be switched off.
4	Set the pushbutton/control switch to 0	Since the crane switch main contactor must be switched off, other travel motions may not be initiated.
5	Reset button on Speed Monitor	Crane contactor main switch is switched on again.
6	Set switch-off speed 1 above switch-off speed 2 specified in the circuit diagram (e. g. 3000 rpm at 2650 rpm)	Speed Monitor must not be actuated.
7	Set switch-off speed 2 below switch-off speed 2 specified in the circuit diagram (e. g. 1000 rpm at 2650 rpm)	Speed Monitor must not be actuated.
8	Actuate LIFT or LOWER pushbutton/control switch and lift or lower at slow speed	Display (e. g. 100 rpm) Speed Monitor must not be actuated. The crane switch must remain switched on.
9	Actuate pushbutton/control switch in the same direction as specified under step 8 and lift or lower at fast speed	Displayed value increases as speed increases. Speed Monitor must be actuated if the preset speed is exceeded and the crane switch main contactor must be switched off.
10	Set pushbutton/control switch to 0	Since the crane switch main contactor must be switched off, other travel motions may not be initiated.
11	Reset button on Speed Monitor	Crane switch main contactor is switched on again.
12	Check completed	Speed monitoring function is OK.
13	Set the original switch-off speeds 1 and 2 according to circuit diagram	
14	In the event of improper functioning	Stop operation of the crane Inform a qualified electrician immediately.

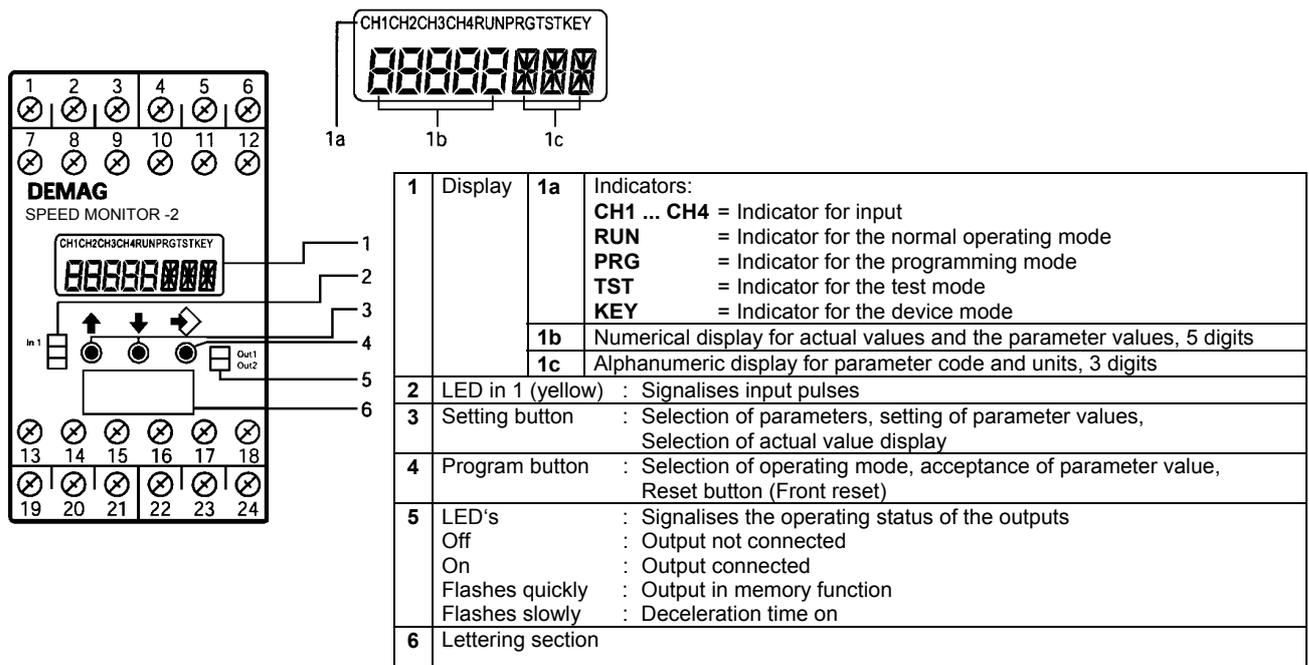
Important: The switch-off unit must be checked at least once a year (e. g. within the scope of the annual inspection).

The DEMAG Speed Monitor features three operating modes:

- Run mode** (normal operating range)
 When the supply voltage has been switched off, the device is in Run mode. The Run indicator is displayed on the display panel and the Speed Monitor performs its monitoring function on the basis of the preset parameters.
- Display mode** (display of parameters and preset parameter values)
 By pressing program button 4 (↔), the device is set into Display mode. The Run indicator is still shown. Parameter range 1 is displayed first. Parameter ranges 2 and then 3 are opened by briefly pressing program button 4 (↔) once more. Within one parameter range it is possible to change to the next or the preceding parameter by actuating setting pushbutton 3. The set value is displayed at 1c and the parameter code at 1b on the display. The Run mode is re-initiated by pressing program button 4 (approx. 3 seconds), or when the timeout period of approx. 15 seconds has elapsed. The device then automatically switches into Run mode.
- Programming mode** (setting the parameter values)
 If the parameter to be changed is selected in the Display mode and program button 4 is briefly actuated, the program mode is started. The PRG indicator now also appears on the display in the 1c position and the parameter code flashes. Setting button 3 can be used to change the value within the valid range. The value is saved by pressing program button 4 until the parameter code stops flashing and the PRG indicator goes out. If program button 4 is only pressed briefly, the parameter code stops flashing and the PRG indicator also goes out. Only the changed value is not accepted (the changed value is cancelled). At the same time, the Display mode is opened.

The error memory must be explicitly reset. This can be done as follows:

- manual reset by pressing pushbutton ↔ for at least 3 seconds
- 24V pulse on the assigned reset input
- interruption of operating voltage



Programming the DEMAG Speed Monitor:

Parameter range 1

Prog. step	Introductory function	Display ^{*)}	Activity to be carried out	Explanation
1	↔ press 1x	1 _v ^P	–	Parameter range 1
2	↓ press 1x	100 SP1	Press button ↔ 1x (switchover into Program mode) With the buttons ↑ or ↓, value 1650 can be set and saved	SP1 = 1650 Switching point for output 1 See circuit diagram for setting value
3	↑ press 1x	1 _v ^P	–	–

^{*)} The display data are applicable for a device which still has the basic parameters (factory setting).

Factory Reset of the basic settings

The basic settings can be reset by simultaneous operation of ↑ and ↓ during switching on power supply. This results in loss of all entered parameters.

Programming the DEMAG Speed Monitor:

Parameter range 2

Prog. step	Introductory function	Display ^{*)}	Activity to be carried out	Explanation
1	↔ press 1x	2 _v ^P	–	Parameter range 2
2	↓ press 1x	1000 SP2	Press button ↔ 1x (switchover into the Program mode) With the buttons ↑ or ↓, value 2650 can be set and saved	SP1 = 2650 See circuit diagram for output 1 and setting value
3	↑ press 1x	2 _v ^P	–	–
4	↔ press 1x 3s	0 RPM	–	Device has returned to Run mode

^{*)} The display data are applicable for a device which still has the basic parameters (factory setting).